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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,106

03/18/2004

Jong Hyun Woo

LT-0059

5307

34610

7590

01/23/2007

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CHANTILLY, VA 20153

EXAMINER

SIM, YONG H

ART UNIT

PAPER NUMBER

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/803,106	Applicant(s) WOO, JONG HYUN	
	Examiner Yong Sim	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/18/2004</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Republic of Korea on 03/20/2003. It is noted, however, that applicant has not filed a certified copy of the 10/803106 application as required by 35 U.S.C. 119(b).

Claim Objections

1. Claim 10 objected to because of the following informalities: A grammatical error in the claim. Please insert "in" in line 2 of the claim to read as "included in the extended display." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 9 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant fails to disclose the "replacement LCD lamp" in the specification. Therefore, for the purpose of art rejection the "replacement LCD lamp" will be construed as a "replacement LCD." As best understood by the examiner the claims will be interpreted as stated below,

9. The method of claim 1, comprising: installing a replacement LCD; identifying a replacement LCD frame frequency recorded in a memory provided in the replacement LCD, wherein the replacement LCD frame frequency is different from the LCD frame frequency; deriving a replacement PWM frequency of the inverter responsive to the identified replacement LCD frame frequency; and driving the replacement LCD in accordance with the derived replacement PWM frequency of the inverter.

10. The method of claim 9, wherein the LCD replacement frame frequency is included in the display timing range limit information included the extended display identification data recorded in the memory, and wherein the LCD replacement frame frequency is the vertical sync frequency of the LCD.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 13 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 states that "the memory" includes identification data for a plurality of LCDs. However, note that the memory as recited in claim 13 is provided in the LCD. It is unclear whether the memory, which includes the identification data, is included in the LCD or the computer. Therefore, for the purpose of art rejection as best understood by the examiner, the examiner will construe a plurality of LCDs each having a memory, which holds the identification data of a particular LCD.

Claim 18 states that "the LCD" is adapted to receive a plurality of LCD lamps. It is unclear from the claim and the specification whether an LCD can receive a plurality of LCD lamps or not. The applicant also states in Para 0051, lines 2 – 3; "an LCD lamp preferably included in the LCD." Therefore, for the purpose of art rejection, as best understood by the examiner, the claims will be interpreted as stated below;

18. The apparatus of claim 11, wherein the apparatus is adapted to receive a plurality of LCDs (lamps are included in the LCDs), and wherein at least two of the LCD lamps have different frame frequencies.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

4. Claim 21 is rejected under 35 U.S.C. 102(e) as being anticipated by Nuimura (US 2004/0008176A1).

Re claim 21, Nuimura teaches a portable computer [Para 0004; line 3 – 6; “monitor is used to describe LCD used in notebook computers”], comprising: a main CPU (“CPU” 32, Fig. 8) in a base module housing an input device (It is inherent that a notebook computer has an input device such as a touch pad in the housing.); a display coupled to the main CPU to display data received from the CPU [See fig. 1. 3c contains a CPU and is coupled to a display device 2); a memory recorded with identification data for an LCD of the display (“memory” 34, Fig. 8); an inverter that supplies a voltage to the LCD (“Inverter” 4a, Fig 1); and a controller (“control portion” 3c) coupled to the main CPU that controls a PWM frequency of the inverter in accordance with an LCD frame frequency included in the identification data [Para 0027; “CPU determines the frequency f_c of the PWM by inputting the frequency of the f_v specified by frequency data D_f stored in the internal memory. Also see Para 0029.].

Re claim 22, Nuimura discloses the portable computer of claim 21, wherein the display is rotatably coupled to the base module. It is inherent a notebook computers as described by Nuimura has the configuration such as the display being rotatably being

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coupled to the base in such a manner to mimic the configuration of a "notebook." Such as rotating the display for closing and opening the computer.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. **Claim 1-3, 6 – 17 and 19 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuimura (US 2004/0008176) in view of Nitta et al. (US 2001/0004257 A1, herein after "Nitta").**

Re claim 1, Nuimura teaches a method for controlling an inverter (inverter 4a) [Fig. 1] pulse width modulation (PWM) frequency of a liquid crystal display (LCD) [Para

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0004; "display devices such as LCD used in notebook."] in a portable computer [Para 0027, lines 24 - 29; "the CPU determines the frequency f_c of the PWM signal S_c by inputting the frequency of the vertical synchronization frequency f_v specified by frequency data D_f "], comprising:

deriving a PWM frequency of an inverter adapted to control a brightness of the LCD responsive to the identified LCD frame frequency [Para 0012, lines 4 - 8; "a duty ratio of a brightness control signal to be output to a lighting device by controlling a frequency of the brightness control signal in response to a vertical synchronization frequency." The vertical synchronization is equivalent to the frame frequency of 60Hz of NTSC system as described in line 9 of Para 0031.];

and driving the LCD in accordance with the derived PWM frequency of the inverter, [Para 0034, lines 1 - 5; "generates the driving signal S_d in response to the inputted PWM signal S_c , and the fluorescent lamp 4b is driven thereby."]

But fails to disclose the LCD frame frequency recorded in a memory provided in an LCD.

However, Nitta discloses method of storing EDID (extended Display Identification Data), which includes, the resolution, frequency of vertical scan signals, frame rate, vender code and the serial number in the memory of a Plug-and-Play compatible display apparatus where the information varies with models of display apparatus. [Nitta: Para 0011].

Therefore, taking the combined teachings of Nuimura and Nitta, as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the

method of storing frame rate in the memory as taught by Nitta to the method for controlling an inverter PWM of a LCD in a portable computer of Nuimura to obtain a method of storing frame rate in a memory of an LCD for controlling an inverter PWM of an LCD, so as motivated by Nitta, to select a driver appropriate for display of images and automatically make optimal settings for proper display [Nitta, Para10].

Re claim 2, the combined teachings of Nuimura and Nitta teach the method of claim 1, wherein the LCD frame frequency is identified by a vertical sync frequency [The vertical synchronization is equivalent to the frame frequency of 60Hz of NTSC system as described in Para 0031 of Nuimura.] recorded in the memory provided in the LCD.

Re claim 3, the combined teachings of Nuimura and Nitta teach the method of claim 1, wherein the memory is a non-volatile memory (Nitta discloses a method of storing EDID (extended Display Identification Data), which includes, the resolution, frequency of vertical scan signals, frame rate, vender code and the serial number in the memory of a Plug-and-Play compatible display apparatus [Nitta: Para 001]. As described by Nitta, the EDID is stored in memory.

Although Nitta does not explicitly state that the memory is a non-volatile memory, it is obvious to a person having ordinary skill in the art to realize that EDIDs must be stored in a non-volatile memory to achieve its purpose of retaining the monitor information/identity including the vendor information or the serial number, thereby

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preventing the loss of the monitor information when the monitor is disconnected from its power source.

Re claim 6, the combined teachings of Nuimura and Nitta teach the method of claim 1, wherein the LCD frame frequency is included in display timing range limit information included in extended display identification data recorded in the memory, and wherein the LCD frame frequency is a vertical sync frequency of the LCD [The vertical synchronization is equivalent to the frame frequency of 60Hz of NTSC system as described in Para 0031 of Nuimura.].

Re claim 7, the combined teachings of Nuimura and Nitta teach that the PWM frequency of the inverter is derived using an equation "PWM frequency= $V_{sync} \times n - m$ " where V_{sync} is a vertical sync frequency for the LCD, n is a positive integer and m is a constant selected in a range of 15 Hz to 30 Hz (Nuimura teaches an equation " $f_c(\text{PWM frequency}) = (n \pm \frac{1}{2}) \times f_v(V_{sync})$ " where n is a natural number/positive integer and m is $\frac{1}{2}$ which is a constant [Para 27 – 28]. Nuimura gives an example where f_v is 60Hz where the equation would become " $f_c = f_v \times n \pm \frac{1}{2} \times f_v$ " In this case the constant $\frac{1}{2}$ when derived would fall in range of 15 – 30 Hz since f_v is 60Hz [Para 32].

Re claim 8. the combined teachings of Nuimura and Nitta teach that values of " n " and " m " are set to 4 and 30, respectively (As described by Nuimura in claim 7, " n " is a

natural number meaning that it can be 4 as claimed by Applicant. "m" being 30 has already been analyzed and discussed in claim 7.).

The limitations of claim 9, based on the 112-2nd rejection above, are substantially similar to the limitations of claim 1 except for the limitation "replacement," but Nuimura further discloses with respect to the replacement LCD and different frequencies in [Para 0037], different types/(replacement) of monitors for different systems such as PAL or NTSC, which have different vertical frequencies, are used. Therefore it has been analyzed and rejected similar to the rejection of claim 1

The limitations of claim 10 are substantially similar to the limitations of claims 6 and 9. Therefore it has been analyzed and rejected similar to the rejection of claims 6 and 9.

The limitations of claim 10 are substantially similar to the limitations of claims 6 and 9. Therefore it has been analyzed and rejected similar to the rejection of claims 6 and 9.

With respect to an inverter that supplies a voltage to the LCD, see [Nuimura: Para 0034, lines 1 – 2; "the inverter generates the driving signal/voltage."]; and control means, see (Nuimura: "control portion" 3c, Fig. 1).

The limitations of claim 12 are substantially similar to the limitations of claim 2. Therefore, it has been analyzed and rejected similar to the rejection of claim 2.

Re claim 13, the combined teachings of Nuimura and Nitta teach the apparatus of claim 12, wherein the memory includes identification data for a plurality of LCDs (Nitta discloses method of storing EDID (extended Display Identification Data), which includes, the resolution, frequency of vertical scan signals, frame rate, vender code and the serial number in the memory of a Plug-and-Play compatible display apparatus where the information varies with models of display apparatus [Nitta: Para 0011]. The different models/(plurality) hold different information in its own memory. Therefore the identification data for each LCD is stored in its memory.

Re claim 14, the combined teachings of Nuimura and Nitta teach that the control means sets the PWM frequency of the inverter to a frequency that does not substantially interfere with the vertical sync frequency (Nuimura teaches that a frequency of the brightness control signal/(PWM frequency of the inverter) is controlled by a control unit in response to a vertical synchronization frequency/(avoids synchronization/interference; see [Nuimura: Para 0010, lines 4 – 10]) in order to avoid switching noise [Nuimura: Para 0012, lines 4 – 8]).

The limitations of claim 15 are substantially similar to the limitations of claim 6. Therefore, it has been analyzed and rejected similar to the rejection of claim 6.

The limitations of claim 16 are substantially similar to the limitations of claim 7. Therefore, it has been analyzed and rejected similar to the rejection of claim 7.

The limitations of claim 17 are substantially similar to the limitations of 8. Therefore, it has been analyzed and rejected similar to the rejection of claim 8.

Re claim 19, the combined teachings of Nuimura and Nitta teach that the LCD frame frequency is identified in LCD lamp information corresponding to the identification data, wherein the LCD lamp information is in extended display information data. Nuimura also discloses that Df (LCD information) is stored in the internal memory which is in the CPU. Therefore, the LCD information is stored outside the LCD [Nuimura: Para 0027].

Re claim 20, the combined teachings of Nuimura and Nitta teach the apparatus of claim 11.

But does not teach that the memory is provided in a lamp of the LCD or in the LCD. However, Examiner takes an official notice that it is well known in the art to use an EEPROM for the memory that stores EDID.

Therefore, it would have been obvious to use EEPROM for storing EDID in the memory to retain the display information even when the power is not applied to the system.

3. Claim 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuimura (US 2004/0008176) in view of Nitta et al. (US 2001/0004257 A1, herein after "Nitta"), and further in view of Wada et al. (US 5,977,934, herein after "Wada").

Re claim 4, Nuimura and Nitta as a whole teach the method of claim 1, but fail to disclose the portable computer that is configured to receive a plurality of LCDs, wherein at least two of the LCDs have different frame frequencies. However, Wada teaches the method of configuring an information processing apparatus to receive a plurality of LCD's ("TFT LCD" 2, "STN LCD" 9) [Wada: Fig. 2, Col. 2 lines 33 - 45], wherein the LCDs have different frame frequencies [Wada: Fig. 9C shows a FP, Frame Pulse/Frame frequency, that determines the beginning and the end of one screen in TFT LCD [Col. 5, lines 33 – 37], and Fig. 12C shows a FP of an STN LCD. The figures show that the lengths of the FP's are different from each other, therefore the frame frequencies are different.]

Therefore, taking the combined teachings of Nuimura, Nitta and Wada as a whole, it would have been obvious to a person having ordinary skill in the art to incorporate the method of receiving plurality of LCD's of as taught by Wada to the method claim 1 as taught by Nuimura and Nitta to obtain a method of receiving plurality of LCD's with different frequencies so that any one of a plurality of types of display

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devices can be connected to a common information processing apparatus main unit.

[Wada: Col. 2, lines 25 – 28]

Re claim 5, Nuimura, Nitta and Wada as a whole teach the method of claim 4.

But does not teach that the plurality of LCDs is made by different venders.

However, the STN LCD and TFT LCD as disclosed by Wada, would differ not only in quality, but also in the manufacturing process. [Col 1, lines 56 – 67].

Therefore, it would have been obvious to a person having ordinary skill in the art to realize that LCDs of different types would be provided by different venders to accommodate accessibility and availability of a user.

The limitations of claim 18 are substantially similar to the limitations of 4.
Therefore, it has been analyzed and rejected similar to the rejection of claim 4.

The limitations of claim 23 are substantially similar to the limitations of claim 18.
Therefore, it has been analyzed and rejected similar to the rejection of claim 18.

The limitations of claim 24 are substantially similar to the limitations of claim 14.
Therefore, it has been analyzed and rejected similar to the rejection of claim 18.

The limitations of claim 25 are substantially similar to the limitations of claim 20.
Therefore, it has been analyzed and rejected similar to the rejection of claim 20.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Sim whose telephone number is (571) 270-1189. The examiner can normally be reached on Monday - Friday (Alternate Fridays off) 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/17/2007

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